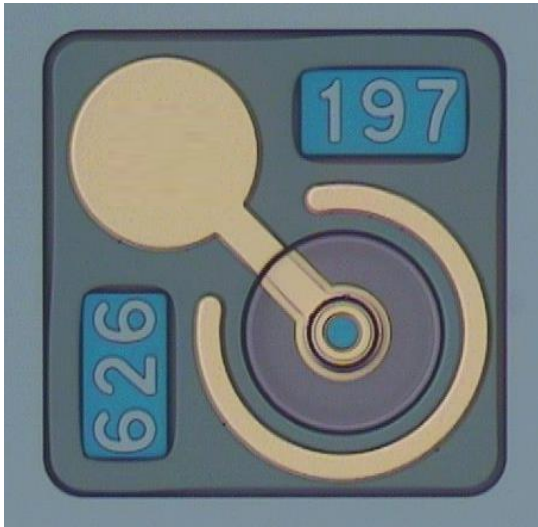



# 850nm 14Gb/s Multimode VCSEL Chip

APA7501010011



## Features:

- 850nm multimode emission
- Low RMS spectral width
- High reliability
- Low threshold and operation current
- Low electrical parasitics
- Data rates up to 14 Gb/s
- Backside cathode and topside anode configuration
- RoHS compliant 

## Applications

- Fiber optical communication links up to 14 Gb/s
- Gigabit Ethernet and storage area networks

## Shipment packaging options:

- Diced wafer on UV tape on metal lead frame
- Grip ring
- Gel-Pak

## Electro-Optical Characteristics

T=25°C unless otherwise noted

Parameter	Symbol	Conditions	Ratings			Unit
			Min	Typ	Max	
Threshold current	$I_{th}$			0.7	1.0	mA
Operating current	$I_{op}$		5.0		6.0	mA
Slope efficiency	$\eta$	$I = I_{th} + 1\text{mA}$	0.35	0.44	0.53	mW/mA
Optical output power	$P_{out}$	$I_{op} = 6\text{mA}$	1.7	2.2	2.7	mW
Operating voltage	$U_{op}$	$I_{op}$		1.9		V
Differential resistance	$R_d$	$I_{op}$	45	60	75	$\Omega$
Emission wavelength	$\lambda$	$I_{op}, T = -5^\circ\text{C} - 90^\circ\text{C}$	840	850	860	nm
Spectral width, RMS	$\Delta\lambda$	$I_{op}, T = -5^\circ\text{C} - 90^\circ\text{C}$		0.25	0.35	nm
Beam divergence	$\Theta$	$I_{op}, \text{Full width } 1/e^2$		24	30	$^\circ$
Modulation bandwidth	$f_{3dB}$	$I_{op}$	10			GHz
Relative Intensity Noise	RIN(OMA)	$I_{op}, ER = 5\text{dB}, 7.7\text{GHz bandwidth}$			-128	dB/Hz

## Thermal Characteristics

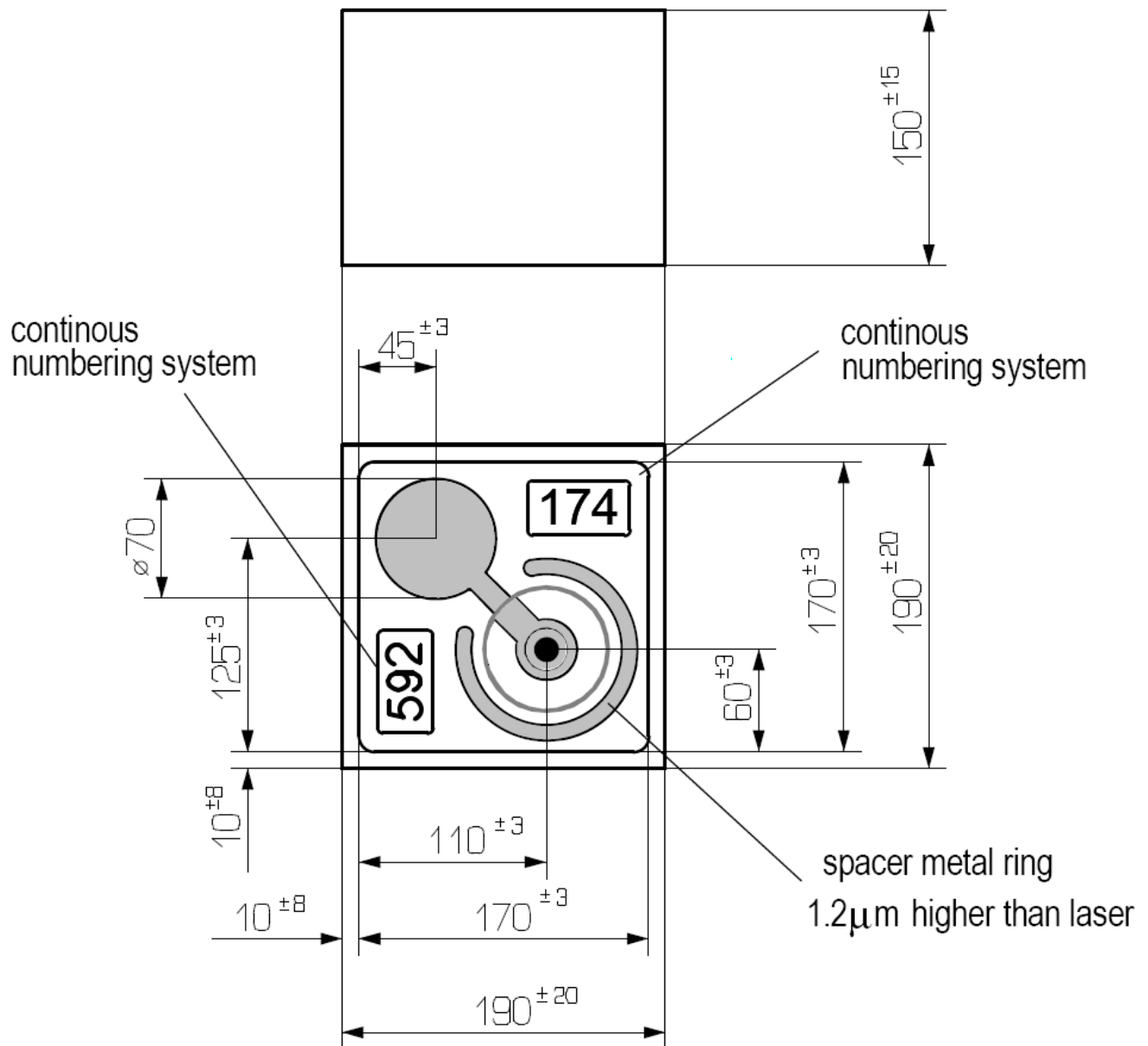
Parameter	Symbol	Ratings			Unit
		Min	Typ	Max	
Wavelength tuning coefficient	$\delta\lambda/\delta T$		0.06		nm/K
Slope efficiency variation 25°C - 85°C	$\Delta\eta_T$	-0.5	-0.3	-0.1	%/K
Thermal impedance	$Z_{th}$		3.0		K/mW

## Absolute Maximum Ratings

Parameter	Rating	Unit
Optical output power	8	mW
Peak forward current (max. 10sec)	12	mA
VCSEL reverse voltage	5	V
Operating temperature	0 to +85	$^\circ\text{C}$
Storage temperature	-40 to +100	$^\circ\text{C}$
Mounting temperature (max. 10sec)	260	$^\circ\text{C}$

**Chip Dimensions**

Parameter	Min	Typ	Max	Unit
Die length	170	190	210	μm
Die width	170	190	210	μm
Die height	135	150	165	μm



RoHS Compliance



II-VI Laser Enterprise is fully committed to environment protection and sustainable development and has set in place a comprehensive program for removing polluting and hazardous substances from all of its products. The relevant evidence of RoHS compliance is held as part of our controlled documentation for each of our compliant products. RoHS compliance parts are available to order, please refer to the ordering information section for further details.

Ordering Information

Product Code	Data Rate	Description	Shipment Packaging
APA7501010011	14Gb/s	850nm 14G MM single VCSEL chip	Diced wafer on metal lead frame <sup>(1)</sup>
APA7501010111	14Gb/s	850nm 14G MM single VCSEL chip	Grip ring <sup>(2)</sup>
APA7501010211	14Gb/s	850nm 14G MM single VCSEL chip	Gel-Pak <sup>(3)</sup>

- <sup>(1)</sup> Full diced 3” wafer on UV tape on metal lead frame Ø 230mm, electronic wafermap provided (standard high volume)
- <sup>(2)</sup> Known Good Dies on UV tape on grip ring Ø 150mm (medium volume)
- <sup>(3)</sup> Known Good Dies in 2” Gel-Pak (low volume)

Contact Information

[www.laserenterprise.com](http://www.laserenterprise.com)

Important Notice

Performance figures, data and any illustrative material provided in this data sheet are typical and must be specifically confirmed in writing by II-VI Laser Enterprise before they become applicable to any particular order or contract. In accordance with the II-VI Laser Enterprise policy of continuous improvement specifications may change without notice. Further details are available from any II-VI Laser Enterprise sales representative.

Safety Labels



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